

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 15 and 19 have been rejected under 35 U.S.C. §102 as being anticipated by Applicant's admitted prior art (AAPA); Claim 2 has been rejected under 35 U.S.C. §103 as being unpatentable over AAPA in view of Bendat et al. and Claims 3-7 and 16 have been objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Considering first then the rejection of Claims 1, 15 and 19 under 35 U.S.C. §102 as being anticipated by AAPA, Applicant wishes to note that the present invention is directed to a component holding head which can hold an electronic component with avoiding downward sagging and bending or the like of the edge part of an electronic component in the vicinity of the positioning mark. To achieve this object, the vacuum chucking holes are arranged at a position which covers straight lines substantially parallel to edges of the electronic component respectively and substantially mutually orthogonal on or over the positioning mark of the electronic component, the vacuum chucking holes being located in the vicinity of the positioning mark and avoiding the positioning mark.

This feature noted above will be now explained in detail with reference to Figures 13 and 14. Three vacuum chucking holes (811a) are arranged parallel to an edge of the electronic component (9). The first vacuum chucking hole (811a) from the edge of the electronic component (9) covers the line A running on the positioning marks (91b). The second and third vacuum chucking holes (811a) are spaced from the edge of the electronic component (9) and cover the line B running on the positioning marks (91b). These lines A and B are orthogonal with respect to each other the positioning marks (91b). With this

arrangement of the vacuum chucking holes (811a), it is possible for a component holding head (81) to hold an electronic component (9) while avoiding downward sagging and bending or the like to the edge part of an electronic component (9) in the vicinity of the positioning mark (91b). Consequently, it is possible to complete connection of lead wires without misalignment and to fabricate substrates with high accuracy and high quality.

In contrast with this, in Applicants Admitted Prior Art (AAPA), the component holding head (81) holds an electric component (9) while being spaced from the edge of the electric component (9) in the vicinity of the positioning mark (91b). This is because the electric component (9) has to allow light from an illumination fixture (88) to pass through the positioning marks (91b) so that the imaging device (87) obtains an image data of the positioning marks (91b).

This matter will be explained in detail with Figures 4 and 5 showing AAPA as follows: Figures 4 and 5 show a situation in which the imaging device (87) picks up an image of the positioning marks (91b, 2b) of the electric component (9) and the substrate (2). In this situation, as shown in Figures 6 and 7, the vacuum chucking holes (81a) of the component holding head (81) are open to a surface of the electric component (9). The component holding head (81) holds the electric component (9) at the position which is apart from an edge of the film member (91) while avoiding the positioning mark (91b). For this reason, deformation occurs, such as downward sagging or recurvation of the terminal part of the electric component (9), and therefore a position offset occurs between the position on the image screen of the positioning mark (91b) imaged from directly above and the position of the positioning mark (91b) which should be opposite the actual positioning mark (2b) of the substrate 2. Thus, if the positioning mark (91b) of the electric component (9) is imaged for the purpose of positioning when it is in the deformed condition and the electric component

(9) is mounted onto the substrate (2) based on the image data obtained in that condition, there is a risk of misalignment occurring, and thus not achieving a good electrical connection.

The Examiner mentions in the Office Action that the examiner disagrees since the applied prior art as shown in Figs. 5 and 7 show the vacuum chucking part (81) that holds an electronic component (9) being configured in a straight line parallel to an edge of the component (9) and are substantially being mutually orthogonal over (to the right of) the positioning mark (91b). Applicant agrees that the vacuum chucking part (81) that holds an electronic component (9) is configured in a straight line parallel to an edge of the component (9). However, Applicant cannot agree that such straight lines are substantially mutually orthogonal over (i.e., to the right of) the positioning mark (91b).

In AAPA, as shown in Figure 7, the vacuum chuck holes (81a) are arranged only on the left side of the positioning mark (91b) in the drawing. More particularly, the component holding head (81) and vacuum chucking part (81a) are not arranged over the line A as shown in Figure 13. Consequently, Applicant cannot agree with the Examiner's comments. In the first place, AAPA is silent about the straight lines (A, B) substantially parallel to edges of the electronic component (9) respectively and substantially mutually orthogonal to on the positioning mark (91b) of the electronic component (9). Consequently, AAPA fails to disclose the important feature of the present invention that the vacuum chucking part holds the electronic component at a position which covers straight lines substantially parallel to edges of the electronic component respectively and substantially mutually orthogonal to the positioning mark of the electronic component, the vacuum chucking part being located in the vicinity of the positioning mark and avoiding the positioning mark, as presently claimed.

In view of the foregoing, it is respectfully submitted that each of Claims 1, 15 and 19 are patentable over AAPA since each of these limitations include the language noted above.

Considering next then the rejection of Claim 2 under 35 U.S.C. §103 as being unpatentable over AAPA in view of Bendat et al., it is respectfully submitted that Bendat et al. fails to rectify the deficiencies noted hereinabove with regard to AAPA. In this regard, it is noted that Bendat et al. has been cited solely for the teaching of a light source and thus its disclosure cannot be used to modify AAPA to meet the limitations emphasized above in the present application.

The Examiner's indication of allowable subject matter in objected-to Claims 3-7 and 16 is hereby acknowledged and is sincerely appreciated. In view of the foregoing amendments made to the independent claims, it is submitted that Claims 3-7 and 16 now merit indication of allowability.

In view of the foregoing, an early and favorable Office Action is believed to be in order and the same is hereby respectfully requested.

Respectfully submitted,

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